

What is claimed is:

1. A laser apparatus comprising:

a semiconductor laser element having a first active layer made of a GaN-based compound, and emitting
5 first laser light; and

a surface-emitting semiconductor element having a second active layer made of a GaN-based compound, being excited with said first laser light, and emitting second laser light.

2. A laser apparatus according to claim 1, wherein
said second active layer includes a plurality of
quantum wells.

3. A laser apparatus according to claim 2, wherein
said second active layer includes twenty or more
quantum wells.

4. A laser apparatus according to claim 1, wherein
said first active layer is made of an InGaN or GaN
material, and said second active layer is made of an
InGaN material.

20 5. A laser apparatus according to claim 4, wherein
said second active layer includes a plurality of
quantum wells.

6. A laser apparatus according to claim 5, wherein
said second active layer includes twenty or more
25 quantum wells.

7. A laser apparatus according to claim 1, wherein

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said first active layer is made of an InGaN or GaN material, and said second active layer is made of a GaNAs or InGaNAs material.

5 8. A laser apparatus according to claim 7, wherein
said second active layer includes a plurality of
quantum wells.

15 9. A laser apparatus according to claim 8, wherein
said second active layer includes twenty or more
quantum wells.

20 10. A laser apparatus according to claim 1,
further comprising at least one third semiconductor
laser element, each having a third active layer made of
a GaN-based compound, and emits third laser light,

25 said surface-emitting semiconductor element
being excited with said third laser light together with
said first laser light.

30 11. A laser apparatus according to claim 10,
wherein said second active layer includes a plurality
of quantum wells.

35 12. A laser apparatus according to claim 11,
wherein said second active layer includes twenty or
more quantum wells.

40 13. A laser apparatus according to claim 10,
wherein said first active layer is made of an InGaN or
25 GaN material, and said second active layer is made of
an InGaN material.

14. A laser apparatus according to claim 13,
wherein said second active layer includes a plurality
of quantum wells.

5 15. A laser apparatus according to claim 14,
wherein said second active layer includes twenty or
more quantum wells.

16. A laser apparatus according to claim 10,
wherein said first active layer is made of an InGaN or
GaN material, and said second active layer is made of a
GaNAs or InGaNAs material.

17. A laser apparatus according to claim 16,
wherein said second active layer includes a plurality
of quantum wells.

18. A laser apparatus according to claim 17,
wherein said second active layer includes twenty or
more quantum wells.

19. A laser apparatus according to claim 1,
further comprising at least one third semiconductor
laser element, each having a third active layer made of
20 a GaN-based compound, and emits third laser light,

said surface-emitting semiconductor element
being excited with fourth laser light which is produced
by polarization coupling of said first and third laser
light.

25 20. A laser apparatus according to claim 19,
wherein said second active layer includes a plurality

of quantum wells.

21. A laser apparatus according to claim 20, wherein said second active layer includes twenty or more quantum wells.

5 22. A laser apparatus according to claim 19, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of an InGaN material.

10 23. A laser apparatus according to claim 22, wherein said second active layer includes a plurality of quantum wells.

24. A laser apparatus according to claim 23, wherein said second active layer includes twenty or more quantum wells.

15 25. A laser apparatus according to claim 19, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of a GaNAs or InGaNAs material.

20 26. A laser apparatus according to claim 25, wherein said second active layer includes a plurality of quantum wells.

27. A laser apparatus according to claim 26, wherein said second active layer includes twenty or more quantum wells.

25 28. A laser apparatus comprising:

a semiconductor laser element having a first

active layer made of a GaN-based compound, and emitting first laser light;

a surface-emitting semiconductor element being excited with said first laser light, emits second 5 laser light, and having a second active layer made of a GaN-based compound and a first mirror arranged on one side of said second active layer; and

a second mirror arranged outside said surface-emitting semiconductor element so that said first and second mirrors form a resonator.

29. A laser apparatus according to claim 28, wherein said second active layer includes a plurality of quantum wells.

30. A laser apparatus according to claim 29, wherein said second active layer includes twenty or more quantum wells.

31. A laser apparatus according to claim 28, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of 20 an InGaN material.

32. A laser apparatus according to claim 31, wherein said second active layer includes a plurality of quantum wells.

33. A laser apparatus according to claim 32, 25 wherein said second active layer includes twenty or more quantum wells.

34. A laser apparatus according to claim 28, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of a GaNAs or InGaNAs material.

5 35. A laser apparatus according to claim 34, wherein said second active layer includes a plurality of quantum wells.

10 36. A laser apparatus according to claim 35, wherein said second active layer includes twenty or more quantum wells.

15 37. A laser apparatus according to claim 28, further comprising at least one third semiconductor laser element, each having a third active layer made of a GaN-based compound, and emits third laser light,

20 said surface-emitting semiconductor element being excited with said third laser light together with said first laser light.

38. A laser apparatus according to claim 37, wherein said second active layer includes a plurality of quantum wells.

25 39. A laser apparatus according to claim 38, wherein said second active layer includes twenty or more quantum wells.

40. A laser apparatus according to claim 37, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of

an InGaN material.

41. A laser apparatus according to claim 40, wherein said second active layer includes a plurality of quantum wells.

5 42. A laser apparatus according to claim 41, wherein said second active layer includes twenty or more quantum wells.

43. A laser apparatus according to claim 37, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of a GaNAs or InGaNAs material.

44. A laser apparatus according to claim 43, wherein said second active layer includes a plurality of quantum wells.

45. A laser apparatus according to claim 44, wherein said second active layer includes twenty or more quantum wells.

46. A laser apparatus according to claim 28, further comprising at least one third semiconductor laser element, each having a third active layer made of a GaN-based compound, and emits third laser light,

20 said surface-emitting semiconductor element being excited with fourth laser light which is produced by polarization coupling of said first and third laser light.

25 47. A laser apparatus according to claim 46,

wherein said second active layer includes a plurality of quantum wells.

48. A laser apparatus according to claim 47, wherein said second active layer includes twenty or 5 more quantum wells.

49. A laser apparatus according to claim 46, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of an InGaN material.

50. A laser apparatus according to claim 49, wherein said second active layer includes a plurality of quantum wells.

51. A laser apparatus according to claim 50, wherein said second active layer includes twenty or more quantum wells.

52. A laser apparatus according to claim 46, wherein said first active layer is made of an InGaN or GaN material, and said second active layer is made of a GaNAs or InGaNAs material.

53. A laser apparatus according to claim 52, wherein said second active layer includes a plurality of quantum wells.

54. A laser apparatus according to claim 53, wherein said second active layer includes twenty or 25 more quantum wells.